BK Whitetails EHD Guidelines & Protocol

EHD is a viral disease of white-tailed deer that is transmitted by the biting midge in the family *Culicoides*. EHD outbreaks are most common in the late summer and early fall when the midges are abundant.

Disease Facts

Causative agent: Epizootic Hemorrhagic Disease virus (genus *Orbivirus*, family Reoviridae)
Species affected: domestic and wild ruminants
Zoonotic risk: No
Transmission: EHD is transmitted to an animal host by an insect in the *Culicoides* genus. *Culicoides* midges or biting flies are commonly known as "no-see-ums" or gnats and are smaller than mosquitoes and other flies. A female *Culicoides* midge picks up the virus from the blood of an infected host and then transmits the virus by biting another host. "**The nose/nasal cavity is the ideal entry location for infection**"
Seasonality: late summer to early fall, South Texas Spring to Fall
Incubation Period: 5 to 10 days, once virus takes effect 8 to 36 hours
Mortality rate: variable
Clinical Signs: swelling of face and neck, small hemorrhages throughout muscles or organs, ulceration of the mouth and skin just above hooves

Causative Agent and Affected Species

Hemorrhagic disease is caused by two different, but related, viruses, Epizootic Hemorrhagic Disease virus (EHD) or bluetongue virus (BT). Both viruses are in the genus *Orbivirus* and family Reoviridae. There are 10 known serotypes (variations) of EHD and 24 serotypes of BT worldwide.

EHD primarily affects white-tailed deer and can cause significant mortality events, particularly in the northern United States. Outbreaks in domestic ruminants are becoming more common. BT is similar but more typically affects domestic ruminants such as sheep, cattle, and goats.

Epidemiology

Hemorrhagic disease outbreaks are related to seasonal patterns of vector activity and outbreaks occur in late summer and early fall, "do not rule out Spring and Early Summer in the warmer Southern States" . The midges and virus are killed within two weeks of the onset of frost which limits the transmission cycle. Although the vector is not found in all areas, it is easily transported to new areas by wind currents. EHD has circulated in the southern United States for decades and outbreaks in deer there are typically mild or completely in apparent, detectable only by antibody titers. The periodic movement of infected midges in recent years to the northern United States where there is little history of previous exposure results in severe outbreaks with high mortality.

Clinical Signs

Clinical signs vary based on the serotype of EHD and whether or not animals have any preexisting immunity. The incubation period ranges from about 5 to 10 days with clinical signs in white-tailed deer usually present approximately 7 days after infection with the virus.

The acute forms of the disease have high mortality rates. Deer may have reduced appetite, weakness, and loss of fear of humans. Fever and edema are common and deer with EHD often have a swollen head, neck, tongue, or eyelids. Deer die quickly within 8 to 36 hours. Fever causes deer to seek out water, so that dead deer may be near or in water. **The South Texas Extreme Heat will speed up the process by making it almost impossible for the deer to break the fever**. The
virus damages the endothelium, or the lining of the blood vessels causing small hemorrhages over the body. Hemorrhage of the heart and lungs can result in respiratory distress. There may be dental pad erosion or tongue ulcers as well as bloody discharge from the nasal cavity. Ulcers of the stomach (rumen and omasum) may also be present.

In the southern US deer or in domestic livestock the virus may be asymptomatic. Deer that have more mild infections may develop the chronic form of EHD which causes ruminal ulcers and cracked and abnormal shaped hooves. Domestic livestock may have ulcers in the mouth and around the hooves, lesions that resemble both Foot and Mouth Disease and Blue Tongue disease. (some information above from Cornell University).

BK Whitetails Preventative Guidelines

All successful Deer Breeder Programs have excellent animal husbandry. You take care of your animals as you would take care of your own family. Keep your herd at an affordable level for your finances, “It’s not how many deer you can afford to lose, its how many deer you can afford to keep alive”. You will never save them all but don’t ever wish you should of done something when you could have.

The Pens

The amount of land your deer occupy 24/7, their house, their yard, their restaurant, their restroom, their maternity ward, their graveyard. I think you get the idea, this is where everything happens and hopefully you can remove the graveyard.

1. Have the ability to rotate and rest pens to allow vegetation to grow back.

EHD Preventative Measures in the Pens

A. Whether you hand feed or use gravity feeders, you have to keep the area around the feeders clean, no better source for FLY, Midges, and Gnats than in all the feed mixed in the soil. Rake and scoop those feed areas best you can, I use Python Livestock Dust after we clean sprinkled on the soil around the feed troughs and will dust it regularly between cleanings. Keep the feeders and troughs clean as well.

B. High traffic manure areas of the pens, I will use hydrated lime on these areas on a regular basis, especially right after a rain. Deer manure is not a

good source of food for fly larvae but large concentrations can be. I just give it a good dusting so you know it was done but not so much where I will see it a week later.

C. Fly, Midges, Gnats are attracted to foul or sweet smells. During high activities of these flying pests I will only feed my base pellets, no sweet textured feeds. If you have to feed sweet textured feeds put it out an hour after dark and only enough that they will eat and be gone in the morning. I would do the same with Alfalfa or Chaffhaye, one hour after dark. The reasoning on the roughage is that when they eat and tear at it saliva and nasal fluids get on the hay.

D. Water troughs and muddy areas around the water trough. Moisture is a must for these flying pests. If you are a hand feeder and in your pens at least twice a day consider going to small troughs with a float so the water turns regularly thru the day and if it gets knocked over minimal water gets on the ground. I use 3 gallon troughs and the water turns on often, fresh water is always best. If you can't do that than clean your troughs on a weekly basis, I wire brush with bleach right in the pen so the water you dumped out is now getting the water and bleach I used to clean the trough.

E. Misting Systems and Fly Bait in and around the pens. I use a lot of fly bait in my lanes and around my pens. I will typically use the fly bait on the downwind side of the pens, these flying pests that are getting the smell of the pens and I want them to get the smell of the fly bait and stop on it before they get into the pens. I also use the fly bait on the lanes in the pens; I do not use the fly bait in the pen. Misting systems are great and I run my most amounts of misting in the afternoon and evening hours.

F. I keep the brush and grass cut back many yards away from the pens, its opens up for a good air flow, these flying pests don't do well in wind and it eliminates resting areas for them close to the pens.

G. I treat or eliminate any areas of ponding or standing water in or around my pens. I'll throw lime into any standing water or chlorine tablets.

H. If something dies in or around the pens remove and get rid of it, quickly. I immediately burn anything dead.

I. I do use Spectricide Granular insect killer in my pens using caution around feeding areas. I use this 3 times a year. I will use 30 days out from start of fawning and won't use again until fawns are weaned. I will spot treat any fire ant beds during fawn season.

J. Keep the pens as clean as you can, there is nothing made to treat the soil but you can treat what you or the deer have placed on the soil.

K. When we go into feed we carry the blue can of Raid Fly Spray and spray around the feed areas. You can never kill enough flying insects.

*** I recommend reading the Schoenthal Dissertation from TAMU regarding the midge fly.**

The Deer

"Know your deer, you have to be able to spot small signals that will let you know something is wrong, they aren't built to show weakness"

A. See my vaccination protocol as I do vaccinate for EHD from Newport Labs, they will give you vaccination schedule. I can't tell you it works there are too many variables from year to year, but it gives me peace of mind and I don't believe it hurts anything. Keep other vaccinations current, I use Covexin 8. **Consult Newport Labs**.

B. Make sure you are worming your Deer, I use Valbazen, Ivomec Plus and wormer pellets at various times of year. Deer that are free from parasites are a lot healthier.

C. Do not use sulfur with your deer, no sulfur additives, blocks etc Sulfur creates other issues and the deer will never eat enough to make a difference.

D. Use the powerful tool of Necropsy in the event you have an undetermined death.

E. In the vent of high activity I will use grapefruit in the drinking water, it puts an oil slick on the surface of the water and when the deer goes to drink it gets a slight film of oil on its nose and mouth area which emits vapors and it helps keep the flying pests stay away. **Consult your veterinarian**.

F. Remember the mouth, nose and nasal passage are the most susceptible locations for the flying insect to penetrate easily. The deer has thick hair and thick ears neither ideal for the flying insect. Keep the area where they stick their nose as clean as possible.

The Diagnosis

You never want to miss diagnosis a deer and you especially don't ever want to give the deer medications it doesn't need. There is one good thing about EHD you are going to get it right immediately or you will adjust the diagnosis for something else. I'll explain.

A. EHD is fast acting, you should see lameness, walking on egg shells, ears down, not going to food, going to water often, nose dry, no discharge, doesn't care your around, away from the rest of the deer, slow to get up, walks with hunched back, and no coughing unless possible late stages. If

you see swelling in the face or right above the hooves that's an advanced sign, the virus is progressing fast.

The Treatment

" I never immobilize a sick deer it's too hard on their system, they are fighting the illness and now they have to fight off the withdrawals from the immobilization drugs" Don't confuse sick deer with a hurt deer.

A. If at all possible isolate the deer where it is in a manageable environment, put it in the barn or into a smaller pen. You need to contain the deer's environment. Do the best with what you have. I have a swing fence in the pens where I can close or confine a deer within in the pens.

B. Initial treatment is Dexamethasone a glucocorticoid used as an anti- inflammatory to reduce swelling and hemorrhaging; for adrenal insufficiency for water retention. I use 24mg Dexamethasone on an aggressive schedule keeping in mind only using as little as I can. I give initial dose IM and 12 hours later a second dose IM and a third dose IM18 hours after second dose. I will give a fourth dose IM of Dexamethasone 48 hours after initial dose. **There is no need to give the antibiotic if you can't stop the hemorrhaging**. I do not give the antibiotic Draxxin or Enrofloxacin IM until 48 hours after the initial dose of Dexamethasone and only if needed. I will give a dose of Enrofloxacin SQ at the 72 hour mark regardless if I used Draxxin or not. **Consult your Veterinarian** .

C. You have got to keep water as close to the sick deer as possible that's why confining helps. Very important for them to have the ability to get water often and regular without having to move for it. The easier it is for them to drink the more they will drink. Don't add anything to the water. The water is like antifreeze for the fever, helps it break.

D. Keep fresh fruits and vegetables, they are full of water and highly palatable/digestible. They need to eat for strength. Just like the water keep as close as possible so the sick deer so it doesn't have to move far to get it. I use, watermelon, apples, blueberries, pears, carrots, kale, grapes, and spinach. They don't have to eat much to get great benefits. I will also lightly sprinkle DFM on the food to help the rumen.

Conclusion

Always consult your veterinarian and do a necropsy upon an undetermined death. You want to do as many things you feasibly can in your favor and a lot of them don't involve bothering the deer. Remember your deer will only be as healthy as you treat them; practice excellent animal husbandry. Keep their environment as healthy as you can. I may have listed a lot items to do but once you start doing them it will become routine. Pay attention to the environment around your pens and even in the pasture. A lot of what I do to prevent EHD I do for the deer in the pasture as well.

-BK Whitetails